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matter in aqueous solution, but to have resulted from igneous fusion. The fact that they are always associated with diorite, which has been left in its present positions in a molten state, points in this direction. (Bull. Geol. Soc. Am., Vol. II., pp. 125-140.)—According to R. Etheridge, Jr., there have been no geologic traces of man discovered in Australia up to the present time. The meagre details in the finds recorded render their evidence untrustworthy. (Proc. Linnean Soc. New South Wales, Vol. V., pp. 259-268.)—Professor von Ettingshausen, the eminent Austrian paleobotanist, has published a memoir on the fossil plants of New Zealand. This work is now being reproduced in English, and will be published with a large amount of additional information upon the same subject. (Rept. Col. Mus. and Geol. Surv. New Zealand, No. 20.)—The annual appropriation for the Geological Survey of Texas, made by the Legislature just adjourned, is \$35,000, exclusive of printing. Appropriations were also made for testing the lignites, for the publication of an accurate map of the state, and for the erection of a laboratory building at the University of Texas, which will contain a suite of rooms for the chemical department of the survey.

BOTANY.

North American Diatoms.¹—Seven years ago the botanists of this country were presented by Mr. Wolle with a handy book on Desmids, and three years later they found themselves again indebted to the industrious author for an equally useful work on the fresh-water Algæ of the United States, exclusive of the Desmids (treated in the previous work) and the Diatomaceæ. We have now the pleasure of noticing a volume on the Diatoms of North America, in which the author completes his series of works on the Algæ.

The plan of the work resembles that of Schmidt's "*Atlas der Diatomaceen Kunde*," in which figures serve in place of specific descriptions. Any one who has worked with these tiny plants knows full well that a good figure is of much more use in the determination of species than a great deal of descriptive text. The text is useful,

¹ Diatomaceæ of North America. Illustrated with twenty-three hundred figures from the author's drawings on one hundred and twelve plates. By the Rev. Francis Wolle, author of "*Desmids of the United States*," "*Fresh-Water Algæ of the United States*." Bethlehem, Pa., The Comenius Press, 1890.

but the figures are much more so. Accordingly, our author has given us an abundance of figures, to represent our fourteen hundred species. He has also greatly simplified the work of comparison by having all the figures drawn to the same scale. By a little patience and practice the student of Diatoms may easily identify any species he may happen to find.

The book contains in addition to the plates a short preface, in which a brief historical account is given of the study of Diatomaceæ in this country; following this is a bibliography, including forty-seven citations; next follows a short "Introduction" of five pages, devoted to a summary account of habits, structure, etc.; after which comes Prof. H. L. Smith's "Conspectus of the Families and Genera," as published in *The Lens*, in 1872. Last of all in the text is an alphabetical arrangement of genera and the American species under them (also arranged alphabetically), with references to the plates in which they are illustrated.

The work will at once become a necessity to every botanist who gives any attention to these interesting plants. The low price of the book (\$6.00) is another feature which will commend it to all.—CHARLES E. BESSEY.

The "Field Edition" of Gray's Manual.—This new book weighs fourteen ounces, and measures seven and three-eighths by four and five-eighths inches, and is but seven-eighths of an inch in thickness. The old book weighs more than two pounds, is an inch longer and wider, is twice as thick, and more than two-and-a-half times the bulk of the new one. With exactly the same type, and actually four more printed pages, the little book is admirably suited to the botanist's needs. Its leather cover and strong binding give it much greater durability than the old one, while its small size enables the collector to slip it easily into his pocket. Now that such an edition has appeared, we wonder that publishers did not venture to bring it out sooner.—A. F. WOODS.

The Flora of the High Nebraska Plains.—The 20th of August, 1890, I set out for Western Nebraska, where I spent a month in collecting on the plains above 4,000 feet altitude above sea-level. Waiting for the train at Julesburg, Col., I could not withstand the temptation to take a walk on the bottomland of Lodge Pole Creek. The flora was far from rich. The grass here, as well as nearly everywhere in Deuel, Banner, and Cheyenne counties, Neb., was very short, and, on account of the long drought, dried up. The whole valley reminded me of a pasture in the month of November. A list of a few

of the plants I saw I give from memory : *Cnicus ochrocentrus*, *Liatris punctata*, *Cleome integrifolia*, *Cleomella angustifolia*, *Gaura parviflora*, *G. coccinea*, *Lygodesmia juncea*, *Eriogonum annuum*, *Psoralea tenuiflora*.

I spent about two weeks on the high table-lands of Deuel county, seven to ten miles northeast of Chappel. Here the principal grasses are the buffalo grass (*Buchloë dactyloides*) and the grama (*Bouteloua oligostachya*). Both, even when dry, make an excellent pasturage for cattle. The animals graze on them throughout the winter, if the snow is not too deep.

At first I strolled over the prairies and hills, but found very little of interest in the way of plants. Everything was dried up. Three kinds of cactus, viz., *Mammillaria vivipara*, *Opuntia missouriensis*, and *O. fragilis*; two thistles, *Cnicus undulatus* and *C. ochrocentrus*, *Yucca angustifolia*, *Erysimum asperum*, and *Astragalus sericoleucus*, were the most remarkable.

My trip had been a failure had I not found another field for botanizing, viz., the "sand-draws." Sand-draw is a word that I have not seen in any book, and still it is a word in common use among the settlers of Western Nebraska. The sand-draw is about the same as the "wady" of Arabia. It is a stream in which the water, as a rule, is never seen. The sand-draw looks like a dried-up stream with sandy or gravelly bottom. The sand is five to ten, or even up to fifteen or twenty feet deep. In this sand the water is running, perhaps the year round. In one of the smaller I saw a well dug, about fifteen feet deep, that contained water in the month of August.

In the sand-draws I found many plants which for their beauty are well worthy of cultivation. Among others I may mention the pink-purple *Ipomœa leptophylla* (also remarkable for its immense root, weighing sometimes as much as 100 pounds); the white prickly poppy, *Argemone platyceras*; the yellow *Menezelia nuda*; the white or pink *Oenothera albicaulis*; *Lupinus argenteus* var. *procumbens*; *Polanisia trachysperma*; *Cleome integrifolia*; *Chrysopsis villosa*; *Asclepias speciosa*; *Croton texensis*; *Eriogonum annuum* and *E. corymbosum*, etc. Also of interest is the little sand cherry (*Prunus pumila*), a low shrub with creeping branches and big, juicy, edible berries. Among the rarer plants I found were *Pectis angustifolia*, *Acerates auriculata*, *Petalostemon tenuifolium*, and another near to *P. gracile*.

I also took a day's ride out to a cañon near North Platte River. The additions to my collection made during the trip contained, among others: *Psoralea linearifolia*, *Eriogonum alatum*, *E. flavum*, *Ribes aureum*, *R. cereum*, *Dalea aurea*, *D. laxiflora*, and *Prunus demissa*.—P. A. RYDBERG, Lincoln, Neb.